

Airship Insurance, Regulations, and Other Legalities

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Topics to be discussed

- **Airship Insurances**
- **Current Airship Regulations**
 - Pilots Licenses
 - Airship Design and Certification
- **FAA Updates to Airship Regulations**

Cargo Airship Insurances

- **Liability insurance is easily available for airship operations, at attractive prices**
- **Airship hull insurance typically was only available through Lloyds of London but other firms now underwrite airship hulls**
 - Annual premiums have been in the range of 7% to 10% of the value of the airship, but premiums have increased to 9% to 15% recent years
- **Claims are usually filed to pay for envelope replacement cost**
 - Envelope is usually the most expensive single component
- **A limited form of self-insurance is to have replacement envelope in storage**
 - Envelope is a life-limited replacement part (10 to 15 years life)
 - Availability of replacement envelope can reduce hull insurance premiums
- **Special insurance provisions may be necessary to limit liability of transport airship operations within the national airspace**

FAA Airship Regulations

Airships http://www.faa.gov/aircraft/air_cert/design_approvals/airships/airships_regs

Regulations & Policies

Updated: June 27, 2011

Title 14 Code of Federal Regulations

[14 CFR part 21](#), Certification Procedures for Products and Parts

[14 CFR part 43](#), Maintenance, Preventive Maintenance, Rebuilding, and Alteration

[14 CFR part 91](#), General Operating and Flight Rules

Advisory Circulars (AC)

[21.17-1](#), Type Certification-Airships

Related Guidance

[Transport Airship Requirements](#) (PDF)

(Under the provisions of 14 CFR Part 21.17, it is planned that these requirements will be accepted as "airworthiness requirements")

[FAA-P-8110-2, Airship Design Criteria](#) (PDF)

[LFLS - Airworthiness Requirements for the type certificate of airships in the categories Normal and Commuter](#)

(Under the provisions of 14 CFR Part 21.17, it is planned that these requirements will be accepted as "airworthiness requirements")

Small Airplane Directorate [Additional Policy for Airship Type Certification Projects](#) (PDF), December 1, 1997

FAA Airship Pilots Licenses

- **FAA Part 61 - Section 61.129 “Aeronautical experience”**
<http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=40760189a03dfea0b501608f33820a45&rgn=div5&view=text&node=14:2.0.1.1.2&idno=14>
- **FAA private pilot lighter-than-air license**
 - Minimum requirements: written exam and 25 hours of airship instruction
- **FAA commercial pilot lighter-than-air license**
 - Minimum requirements: Commercial Pilots License (single or dual depending on the airship), written exam and 50 hours airship instruction
 - Minimum flight hours:

○ Heavier-than-air (HTA)	200
○ Airship	50
○ Pilot-in-Command	30
○ Cross Country	10
○ Night	10
○ Instrument	10 (Minimum in airship)
- **Additional experience base for commercial airship operators**
 - Instrument Rating
 - At least 700 hours of Pilot in Command (PIC) of a multi-engine aircraft
 - An additional 150 hours plus of airship PIC flight experience

FAA Airship Certification - Background

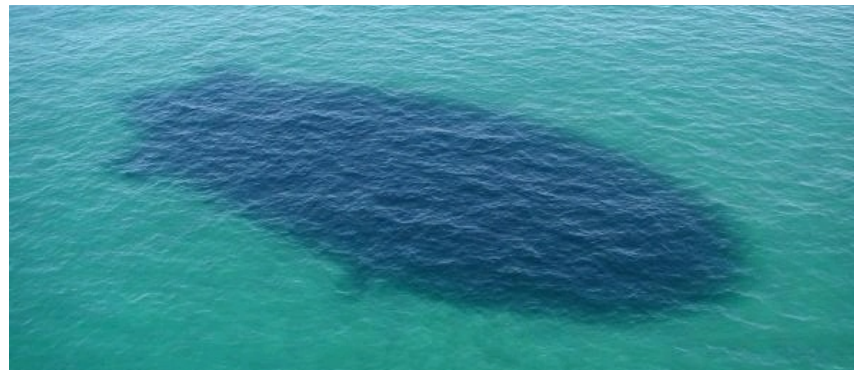
- **Prior to April 13, 1987, there were no US Federal airworthiness criteria for type certification of airships**
 - **Airships were built to U.S. Navy detail design specifications, and civil approval for type certificates was based on the Navy's approval of the airship design.**
 - **Approvals were predicated on the extensive experience of the U.S. Navy with airship design, construction, and operation**
 - **The U.S. Navy decommissioned its last airship in the early 1960's, and did not resume operation of airships until 2009**

US Navy ZPG-3W



FAA Airship Certification

- **FAA still does not have airship Certification Regulations**
 - “Small Aircraft Directorate” in Kansas City, MO, has overall responsibility for FAA certification of LTA vehicles
 - The Kansas City FAA office provides oversight of the activities carried out by the local FAA airship certification authorities
 - Local FAA office nearest to the airship manufacturer’s location has responsibility for day-to-day interaction with airship manufacture
 - Certification activities will be carried out at sites identified by the airship manufacturer



FAA Airship Certification (cont.)

- **FAA does have the “Airship Design Criteria” (ADC)**
 - In January 1983 with NASA assistance FAA established the Airship Design Criteria (ADC)
 - Criteria was based on FAR Part 23, U.S. Navy detail design specifications for airships, the British Civil Air Requirements (BCAR) section Q, and additional FAA/NASA criteria appropriate for conventional non-rigid airships
 - FAA has made one revision to the ADC, but the change was not incorporated into the ADC. While applying this version of the ADC to actual type certification projects, the FAA discovered portions of the report that required additional clarification or revision. These changes were incorporated in change 1 to FAA P-8110-2 dated July 24, 1992
- **ADC provides “guidance” but not “requirements” for airship designers**
 - The ADC is neither mandatory nor regulatory and does not constitute a regulation
 - ADC contains a list of design criteria found acceptable to the FAA Administrator for the type certification of airships
 - These criteria are not the only ones that may be considered acceptable

European Airship Certification

- **Transport Airship Requirements (TAR)**

- Issued March 2000 by the Civil Aviation Authorities Luftfahrt-Bundesamt of Germany and Rijksluchtvaartdienst of The Netherlands. TAR now administered by European Aviation Safety Agency (EASA)
- Provides comprehensive airworthiness requirements for large airships to accommodate their Type Certification in Europe
- Based on the FAA ADC and European aircraft certification standards
- Encompasses all types of airship designs and flight modes
 - Non- or semi-rigid, conventional rigid, metal rigid or metal pressure airships
 - Horizontal or vertical take-offs and landings

- **TAR defined transport category airship**

- 1) Multi-engine propeller-driven, with passenger seating of 20 or more
- 2) Or a maximum weight of 15,000 kg or more
- 3) Or a volume of 20,000 m³ or more, whichever is greater

- **TAR status**

- Not yet complete as a comprehensive regulatory document
- Does not specifically address “hybrid” airships
- Principal reference FAA and EASA will use for certification of large airships

FAA Updates to Airship Regulations

Introduction and Background – Part 135/125

- 1950's & 60's - Rapid growth of “on demand” air taxi industry precipitated creation of FAA Part 135 to address the growing needs of this community
- 1978 - Major rewrite, 30 or fewer pax seat and 7,500 lb or less payload
- 1980 - Part 125 created for large airplanes – 20 or more pax seats or 6,000 lb or more payload
- Today – Current FAA regulations do not adequately address new issues, new technologies, or new operational options

Establishment of Aviation Rulemaking Committee (ARC) for Part 135/125

- Purpose – Allows FAA and industry to collaborate on evaluation of regulatory issues and development of recommendations for rule changes.
- Scope – Comprehensive review and rewrite of Parts 135/125
- Structure – Multiple Work Groups interact with Steering Committee
- Membership – Cross section of General Aviation industry
- Timeframe – April 2003 - April 2005

FAA was supposed to have issued new rule changes in a “Notice of Proposed Rulemaking” (NPRM) in late 2005

ARC Roles & Responsibilities

- **Steering Committee**

- Review work group papers
- Consolidate recommendations
- Forward recommendations to FAA

- **Work Groups (ten)**

- Review issues, document discussions & recommendations
- Brief Steering Committee

Work Groups

Applicability

Operations

Equipment & Technology

Airships

Rotorcraft

Aeromedical

Airworthiness

International

Part 125

Training

Airship Working Group (AWG)

- **AWG Assignment and Scope**
 - Develop definitions, applicability, safety and maintenance standards for airship operations
 - Evaluate ALL FAA regulations, (except Part 121) and recommend changes that will govern current and future airship operations

AWG Members

Paul Adams

Rudy Bartel (ABC)

Roman Buettner (FAA)

Scott Danneker (AMS)

Jim Dexter (Lightship)

Douglas Edwards (FAA)

Josh Ellingwood (AeroVehicles Inc)

Bob Fowler (AeroVehicles Inc)

James Hilton (Lightship)

Ron Hochstetler (Chairman)

Rich Jensen (AeroVehicles Inc)

Tyrone Park (FAA)

Karl Schletzbaum (FAA)

LTC Mike Woodgerd (US Army)

AWG Methodologies

- Review regulations for relevance to LTA operations
- List Parts and sub-sections to be reviewed
- Distribute review assignments to AWG members
- Draft recommendation documents
- Submit recommendation drafts to Steering Committee

Should rules language be specific, or Performance based ?

- 1. Make minimal changes to current language when possible**
- 2. Draft wording that was as broad as possible**
- 3. Require a capability without specifying the means to achieve it**
- 4. Conform FAA rules to EASA TAR**

Recommendation Drafts

RECOMMENDATION DOCUMENT
Number: Airships 65
Issue: Adding paragraph §91.615 <i>Airship cargo, crew and ballast exchange operations</i> , to be applicable to airships only.
Discussion: <p>It is proposed to add a paragraph that allows airship cargo exchange operations when such operations are defined and approved by the FAA. Large airships are considered to be capable of performing certain types of operations that other aircraft cannot perform, so enabling and specifying statements need to be included in the operational rules.</p> <p>Large airships are considered to have a potential, especially as in house cargo-carrying aircraft, of being used under Part 91. Enabling language introduced at this time will eliminate having to expend resources in the future considering such large airship operations on a case-by-case basis. The current cost impact is considered to be nil.</p>
Recommendation: <p>Create new <u>Part 91.615: “Airship cargo, fuel, provisions, crew, and or ballast exchange operations.”</u></p> <p><u>“Airships as defined in 91.501 may conduct tethered, moored, or position-holding cargo, ballast, fuel, provisions, personnel exchange, or observation operations when such operations and required equipment are defined in FAA approved Airship Flight Manuals, Airship Ground Handling Manuals, or other FAA approved document.”</u></p>

Recommendation Drafts

RECOMMENDATION DOCUMENT	
Number:	§ 135.227 Icing conditions: Operating limitations.
Issue:	<p>As the airship is an aircraft that can achieve flight without complete dependence upon aerodynamic lift, provided the flight control system is not frozen and accumulation of ice/frost exceeds available buoyancy or accumulation of ice/frost is such that the airship trim is affected, there is not real threat to safety in flight. All of these parameters can be checked prior to flight.</p> <p>Historically, Navy tests of airships in flight in icing conditions proved the airships were safer than those moored on the ground in the same weather.</p> <p>Developing procedures to ensure the airship is in safe condition for flight is a relatively easy task.</p>
Recommendation:	<p>Add the following paragraphs to Rule 135.227:</p> <p>(a), (3) Takeoffs may be made in an airship provided the flight control surfaces are checked and remain moveable, a static weigh-off confirms airship static trim is within approved limits and control of buoyancy is possible within the approved takeoff static weight range.</p> <p>(g) No certificate holder may authorize an airship to take off and no pilot may take off an airship any time conditions are such that frost, ice, or snow may reasonably be expected to adhere to the airship unless the pilot has completed all applicable training as required by §135.341 and unless one of the following requirements is met:</p> <p>(1) A pretakeoff contamination check, that has been established by the certificate holder and approved by the Administrator for the specific airship type, has been completed within 5 minutes prior to beginning takeoff. A pretakeoff contamination check is a check to make sure the flight control surfaces remain maneuverable.</p> <p>(2) The certificate holder has an approved alternative procedure and under that procedure the airship is determined to be free of frost, ice, or snow.</p> <p>(3) The certificate holder has an approved deicing/anti-icing program that complies with §121.629(c) of this chapter and the takeoff complies with that program.</p>

AWG Current Recommendations

104 recommendation documents were submitted!

- New airship crew certifications
 - Airship pilot Type Ratings for large or complex airships (ATP)
 - Airship Flight Instructor
 - Airship Flight Engineer
 - Airship Navigator
 - Airship Dispatcher
- New LTA training and educational requirements
- Allow airships to operate at helicopter minimum altitudes
- Allow airships to fly in icing conditions if equipped with appropriate de-icing and anti-icing equipment
- Exempt airships from IFR “minimum en route altitudes”

Ongoing Issues

- **FAA's accommodation of airships and hybrid-airships**
 - What constitutes the definition of a “hybrid” airship?
 - 1st goal is to define new rules for airships, then adjust rules for hybrids
 - Need adequate definitions for “airships and “hybrid-airships”
 - Could develop new Part 135 sub-section specifically for hybrid-airships
- **Duty/Rest rules**
 - What constitutes adequate rest on an airship?
 - What onboard facilities should be required?
 - How to minimize number of flight crew while not overworking them?
 - How to accommodate for short, medium, and long duration flights?
 - Short-term flight (10 hours or less)
 - Medium-term flight (10 to 24 hours)
 - Long-term flight (24 hours or more)

Recommendations

- 1. Direct FAA to complete development of the Airship NPRM and issue it for industry review and comment**
- 2. Direct the FAA to complete final promulgation of airship regulation updates**